ABSTRACT

This invention extends the range of optical data communication systems by trading speed for distance as well as integrating a plurality of pulses over time to define a single bit of information. Its goal is to increase current IRDA ranges from 1 m to 10 meters as this enables much more interactivity between an individual and a point of sale; this implementation also reduces the amount of wiring required for communication since RF transmission requires less wiring than an ac modem. The extended range of optical data communication is enabled through the use of intermediary relay stations spaced fairly far apart. IRDA communication, as is well known, uses very short duration optical pulses to send data up to 1 Mbit/sec; this has the concomitant effect of minimizing LED duty cycle and preventing excessive heating. As stated previously, this invention uses a number of integrated pulses to represent a single bit instead of utilizing a one to one correspondence between pulses and bits. To accomplish this, processing software causes the transmitter to "stutter" or repetitively emanate the identical pulse representing a bit of information. Sufficient photons are thereby gathered at a receiver to reach a predetermined threshold. A tradeoff of the data transmission frequency in this invention is that as signal intensity drops by a factor of 100 when distance increases by a factor of 10 yielding a distance / intensity ratio of 1/10.

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